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197 28 134.6 July 2, 1997(72) Inventor:
Same as applicant(71) Applicant:
Hofmann, Harald, Prof. Dr.-Ing., 58515
Lüdenscheid, DE(74) Representative:
Patent Attorneys Ostriga, Sonnet & Wirths,
42275 Wuppertal

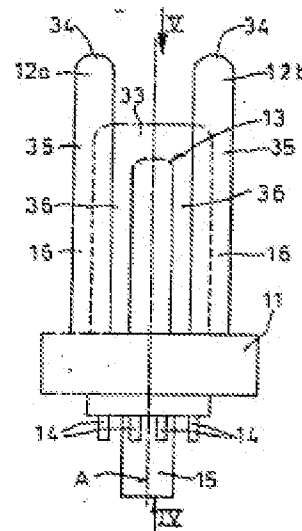
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(54) Lamp

(57) What is illustrated and described is a lamp (10, 23, 28, 29) comprising at least two sublamps (12, 13, 24, 25, 30, 31) differing in color temperature, the net color temperature of the lamp (10, 23, 28, 29) being modifiable, at least one of the sublamps (12, 13, 24, 25, 30, 31) being controllable and the lamp (10, 23, 28, 29) being fashioned as a discharge lamp. It is a goal of the invention to create a very simply fashioned lamp having two sublamps differing in color temperature, the net color temperature of the lamp being modifiable and a reduction in the level of illumination effecting a modification of the spectrum and thus of the color temperature. The peculiarity of the lamp consists in that the sublamps (12, 13, 24, 25, 30, 31) are combined into a lamp (10, 23, 28, 29) that is at least similar to a lamp of conventional structural form, in particular after the fashion of a compact fluorescent lamp (10, 23) or fluorescent lamp (28, 29), and that the sublamps (12, 13, 24, 25, 30, 31) are fixedly arranged on at least one common, ordinary base (11, 11a, 11b).



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Description

The invention relates to a lamp comprising at least two sublamps differing in color temperature, the net color temperature of the lamp being modifiable, at least one of the sublamps being controllable and the lamp being fashioned as a discharge lamp.

DE-OS 35 26 590 describes an illuminating arrangement that measures the color temperature of daylight and regulates the color temperature of the light of the illuminating system in dependence on the measured color temperature of the daylight. In the illuminating arrangement there can be two light sources very different in color temperature, which are regulated in opposing fashion. Only a warm-tone lamp is turned on if the color temperature of the daylight is low, and a blue daylight lamp is turned on as the color temperature rises while the warm-tone lamp is turned down at the same time. In this way the color temperature of the artificial illumination can be continuously adapted to that of the daylight. The concrete fashioning of the light sources, however, is relatively complicated. Thus it is proposed to provide a fluorescent lamp with films of various phosphors running in the longitudinal direction of the lamp and lying one next to another in the circumferential direction. The lamps or their mounts are affixed in the fixture so as to be rotatable about the lamp axis. The control device uses a motor to control this rotation of the lamp about its axis, specifically in such fashion that an appropriate phosphor stripe of the lamp, in dependence on the color temperature of the daylight, comes to lie at the bottom in each case and gives off light of the desired color temperature through the shutter of the fixture.

DE 19 50 581 describes an illuminating device having a light source modifiable as to its luminous intensity. The light source comprises at least a main lamp and a compensating lamp, much weaker than the main lamp, which as to its luminous intensity is coupled in such fashion as to compensate for the change in its color temperature. This illuminating device is suitable in particular for color photography and color image reproduction from television sets. No exemplary physical embodiments are presented.

DE-PS 37 13 041 describes a multicolor gas-discharge lamp that exhibits an outer and an inner discharge vessel. The second electrode of the outer discharge vessel is formed here as a conductive film on an outer surface of a bulb, the film serving simultaneously as a counterelectrode to the third electrode of the inner discharge vessel. This apparatus is also

relatively complicated.

In the case of a lamp it is generally desirable to boost the red spectral component when a level of illumination is reduced. This fact can be justified with reference to the physiological structure of the fovea (human eye: distribution of cones and rods) and can be observed as a physical property of a thermal radiator.

This effect is seen for example when an incandescent lamp is dimmed. The color temperature of the lamp changes because of the dimming process, so that the spectral makeup of the emitted light changes. The light of a dimmed incandescent lamp exhibits a stronger red component and is perceived as pleasant by the human eye. In the case of incandescent lamps, however, the decrease in color temperature comes at the cost of a continuous reduction in luminous yield.

It is a goal of the invention to create a very simply fashioned lamp having two sublamps differing in color temperature, the net color temperature of the lamp being modifiable and a change in the illumination level effecting a change in the color temperature, in particular a change in the red spectral component, when the illumination level is reduced.

The invention achieves this goal with the features of Claim 1, in particular the characterizing part thereof, according to which the sublamps are combined into a lamp that is at least similar to a lamp of conventional design, in particular after the fashion of a compact fluorescent lamp or fluorescent lamp, and according to which the sublamps are fixedly arranged on at least one common, ordinary base.

The designation “lamp of conventional design” within the meaning of the invention refers to lamps having a lamp geometry such as that exhibited by the lamps illustrated for example in the *Handbuch der Lichtplanung* [Handbook of Lighting Design], Erco Leuchten GmbH, Lüdenscheid, Friedr. Vieweg & Sohn Verlagsgesellschaft mbH, Braunschweig/Wiesbaden, 1st Edition, 1991, p. 51 and pp. 62-63. This passage also offers a selection of bases designated as ordinary bases within the meaning of the invention.

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Through the employment of a conventional design in combination with ordinary components, a completely novel lamp having novel properties and advantages is obtained. The invention extends the property of incandescent lamps with respect to their color temperature variation, without restriction in terms of luminous yield, to discharge lamps, which now exist in a

conventional design and thus can be made accessible for a broad range of applications. Because of the use of commercially available components in the lamp according to the invention, the fabrication costs of the lamp according to the invention as well as conversion costs are low. What is more, the lamp according to the invention occupies relatively little space. The lamp according to the invention can moreover be employed in commercially available fixtures. The measures needed for special electronic excitation are relatively inexpensive.

In particular because of the arrangement, according to the invention, of the sublamps on at least one common and ordinary base, a lamp in a usable, commercially available form is created. Because of the employment of conventional bases, conventional technologies can be used in the fabrication of the lamp according to the invention.

The net color temperature of the lamp is composed of the color temperatures of the two sublamps together. The modification of the color temperature of the lamp results from the separate control of at least one sublamp.

One advantage of the invention is that the range of variation of the color temperature can in principle be chosen to be very broad. While the color temperature of an incandescent lamp in dimmed operation lies between 2000 and 3000 K, with an apparatus according to the invention it is possible in principle to attain a wider range through suitable choice of the color temperature of the sublamps.

According to a preferred embodiment of the invention, at least one of the sublamps is dimmable. In this way a continuous, fluid change in the color temperature of the lamp comes about.

According to a further advantageous embodiment of the invention, both sublamps are fashioned as substantially U-shaped tubular bends. These bends can overlap in part. As a result, mutual shading of the lamp components (sublamps) is slight.

According to a further especially advantageous embodiment of the invention, one sublamp is fashioned as a low-pressure discharge lamp and one sublamp is fashioned as a high-pressure discharge lamp. This combination makes possible entirely new qualities of light because it is possible to switch between sublamps belonging to different lamp families and types of light. Furthermore, the relatively long warmup times, in particular of metal-halogen vapor lamps, can be bridged by firing a low-pressure discharge lamp immediately upon switching on. This offers immediate illumination of the room and shines even while the metal-halogen vapor lamp is not

yet emitting any light.

Further advantages can be inferred from the dependent claims, not cited, and with reference to the following description of exemplary embodiments of the invention and the drawings, in which:

Figure 1 is a schematic sketch illustrating the relationship between the change in color temperature and the boost in the red spectral component;

Figure 2 shows a section through a compact fluorescent lamp;

Figure 3 shows a section through the compact fluorescent lamp of Figure 2 rotated 90° about its longitudinal axis;

Figure 4 is a bottom view of the compact fluorescent lamp along view arrow IV in Figure 3;

Figure 5 is a top view of the compact fluorescent lamp along view arrow V in Figure 3;

Figure 6 shows the compact fluorescent lamp of Figure 2 with an additional diffuser;

Figure 7 shows the compact fluorescent lamp of Figure 6 rotated 90° about its longitudinal axis;

Figure 8 shows schematically an electronic ballast and the connection to the compact fluorescent lamp;

Figure 9 shows the compact fluorescent lamp of Figure 6 rotated 180° about a transverse axis;

Figure 10 shows the compact fluorescent lamp of Figure 9 rotated 90° about its longitudinal axis;

Figure 11 is a fluorescent lamp similar to that of Figure 3 with an additional, third bend fashioned in a U-shape;

Figure 12 shows the fluorescent lamp of Figure 11 rotated 90° about its longitudinal axis;

Figure 13 is a bottom view along view arrow XIII in Figure 11;

Figure 14 is a top view of the compact fluorescent lamp seen in the direction of arrow XIV in Figure 11;

Figure 15 is a schematic section through a high-pressure discharge lamp having two high-pressure discharge vessels;

Figure 16 is a section through the high-pressure discharge lamp of Figure 15 with an additional diffuser;

Figure 17 is a schematic section through a high-pressure discharge lamp having two bases;

Figure 18 is a schematic section through a fluorescent lamp, shown in shortened form, having two bases;

Figure 19 shows the fluorescent lamp of Figure 18 with an additional diffuser;

Figure 20 shows a modified embodiment in a form of representation based roughly on that of Figure 2; and

Figure 21 shows an embodiment constituting a variant of the embodiment shown in Figure 20.

Figure 1 shows a CIE chromaticity diagram in order to clarify the desired physical effect. A detailed description by way of an introduction to the field of colorimetry is found for example in *Handbuch für Beleuchtung* [Handbook of Illumination], 4th Edition, 1975, Verlag W. Girardet, Essen. In

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colorimetry, light colors are described by identifying their color location, usually by stating the coordinates X, Y in the CIE chromaticity diagram. In addition, the color of a light source is frequently compared with the color of the so-called blackbody or Planck radiator of various temperatures. In the CIE chromaticity diagram of Figure 1, the color locations of two light sources having a color temperature of $T_F = 2000$ K and $T_F = 5000$ K have been plotted. The lamp according to the invention can, similarly to a Planck radiator, exhibit a variation in color temperature between 5000 K and 2000 K.

The boost in the red spectral component when the illumination level is reduced, in particular when lamps are dimmed, is a fundamentally desirable effect. It can be justified physiologically and is the subject of Kruithof's rule, which states that human beings prefer warm light colors when the illumination level is reduced. More detail on this point can likewise be found in the *Handbuch für Beleuchtung* [Handbook of Illumination] cited above.

With respect to the drawings that follow, it should be stated in advance that mutually analogous components and elements are generally identified by the same or similar reference characters, independently of the embodiment in question.

Figure 2 shows a first exemplary embodiment of the invention as a compact fluorescent lamp 10. Compact fluorescent lamp 10 comprises a base 11, a first discharge vessel 12, and a second discharge vessel 13.

The term discharge vessels within the meaning of the invention refers to low-pressure discharge lamps operated at relatively low working pressures. In contrast to discharge vessels, high-pressure discharge lamps, for example metal-halogen vapor lamps, are designated as burners within the meaning of the invention (see Figures 15, 16, and 17).

Both discharge vessels 12 and 13 are fixedly arranged on base 11. The base corresponds substantially to the base of commercially available compact fluorescent lamps and exhibits contacts 14, which are fashioned as contact pins and make possible the electrical connection of compact fluorescent lamp 10 to a receptacle (not shown). Latch elements (not shown) for fastening to the receptacle can be provided on a continuation 15 of base 11. In addition, there can be pin codings on the base.

Discharge vessels 12 and 13 are fashioned as substantially U-shaped tubular bends. Second discharge vessel 13 is fashioned as a single U-bend having a base limb 33 and two side limbs 36, the ends of side limb 36 being attached to base 11. First discharge vessel 12, as can best be seen in Figure 3, has two bends 12a and 12b fashioned in a U-shape, each having a base limb 34 and two side limbs 35, which are connected to each other inside base 11 in a manner not shown. Thus first discharge vessel 12 is a continuous tube fashioned as two mutually connected U-shaped bends 12a, 12b. The connection between the two U-bends 12a, 12b need not, however, necessarily take place on base 11 but can equally well be created at any location between the two bends 12a, 12b.

In each of discharge vessels 12, 13 there is a phosphor 16. As a rule, different phosphors 16 will be used. The decisive point is that both discharge vessels 12, 13 are fashioned as light sources differing in color temperature. Discharge vessel 12, larger in volume, preferably has a higher color temperature and a higher output, and discharge vessel 13, smaller in volume, has a lower color temperature and a lower output. Thus the higher color temperature T_F can be for example between 3500 and 4000 K and the lower color temperature T_F between 2000 and 2500 K.

Depending on whether an electronic ballast for dimmable discharge vessel 12 is designed as a switch or a dimmer, first discharge vessel 12 can be controlled in either continuous or stepwise fashion. If first discharge vessel 12 is controlled into an "off" state, then only second discharge vessel 13 burns. The compact fluorescent lamp then has the color temperature T_F of second discharge vessel 13.

In the case of continuous dimming, the color temperature T_F of the compact fluorescent lamp can be gradually raised by exciting first discharge vessel 12. At the same time, the illumination level is reduced. If first discharge vessel 12 is turned maximally on, the illumination level corresponds to a value of 100%. The net color temperature T_F of the compact fluorescent lamp is then lower than the color temperature T_F of the discharge vessel having the higher color temperature. If for example the T_F of the first discharge vessel is 4000 K at a power of 26 watts and the T_F of second discharge vessel 13 is 2500 K at a power of 7 watts, then turning first discharge vessel 12 fully on results in a net color temperature T_F of the compact fluorescent lamp of approximately 3800 K at a power of 33 watts. The dimming range of compact fluorescent lamp 10 in this example lies between 18% with first discharge vessel 12 turned fully off and 100% with first discharge vessel 12 turned fully on.

The change in color temperature of the compact fluorescent lamps is a blending of two color temperatures, that is, a simulation of a change in color temperature.

Into each discharge vessel 12, 13, four conductors (not shown) for the power supply voltage are inserted, which conductors are led through wiring (not shown) inside base 11 to contacts 14.

Figure 4 shows base 11 in a bottom view. Contacts 14, eight in number, are arranged in pairs around continuation 15 of base 11.

The top view of compact fluorescent lamp 10 shown in Figure 5 shows the arrangement of both discharge vessels 12 and 13. A base limb 33 of second discharge vessel 13 stands perpendicular to the two base limbs 34 of first discharge vessel 12. Base limb 33 overlaps longitudinal axis A of compact fluorescent lamp 10 and is shorter than outwardly arranged limbs 34 of first discharge vessel 12. Side limbs 35 of U-shaped discharge vessel 12 are longer than side limbs 36 of U-shaped discharge vessel 13. Thus longer and wider bends 12a, 12b overlap inner bend 13. As a result of this advantageous arrangement of both discharge vessels 12, 13 on base 11, there is no problem of shading from any position of the viewer relative to the compact fluorescent lamp.

It is, however, entirely conceivable to arrange two discharge vessels in a different fashion on a base of a compact fluorescent lamp.

The exemplary embodiment of a compact fluorescent lamp 10 shown in Figures 6 and 7 corresponds to the exemplary embodiments shown in Figures 2 to 4, with the exception that now

there is an additional bulb-like diffuser 17, which overlaps both discharge vessels 12, 13. Such a diffuser causes scattering of the light issuing from the two discharge vessels and thus ensures better blending of the light colors. In Figures 6, 16, and 19 the scattering of light is illustrated by arrows. What is more, openings 18, 19 can be arranged on diffuser 17 in order to provide adequate ventilation of the discharge vessels. In the exemplary embodiment, the air flow through compact fluorescent lamp 10 for cooling discharge vessels 12, 13 is indicated by a black arrow. Air enters the compact fluorescent lamp through an inlet opening 18 in diffuser 17, and air flowing through compact fluorescent lamp 10 exits through an air outlet opening 19 in diffuser 17.

Figure 8 shows schematically an electronic ballast for regulating compact fluorescent lamp 10. The electronic ballast can, however, be employed in the same fashion for the exemplary embodiments presented in Figures 18 to 21. Appropriately adapted ballasts are also needed for the high-pressure discharge lamps described later and shown in Figures 15 to 17. Such an electronic ballast 20 can either be integrated into a base 11 of a compact fluorescent lamp 10 or arranged externally to compact fluorescent lamp 10 and connected thereto by wiring 21. In the case of an integrated electronic ballast, wiring 21 shown in Figure 8 is located in base 11 of fluorescent lamp 10. Power supply connections 22 are likewise only schematically indicated. The electronic ballast can be fashioned as switchable or dimmable. In the latter case, at least one dimmable sublamp—first discharge vessel 12 in the exemplary embodiment—can be continuously controlled.

The compact fluorescent lamp 10 shown in Figures 9 and 10 corresponds to compact fluorescent lamp 10 shown in Figures 6 and 7. Here the reversed air flow is indicated when compact fluorescent lamp 10 is ceiling-mounted, for example as a “downlight.” Again the air flows in through an inlet opening 18 and out through an outlet opening 18 in diffuser 17.

The exemplary embodiment of a compact fluorescent lamp 10 shown in Figures 12 to 14 differs from the preceding exemplary embodiment in that there is a third U-shaped bend 12c of first discharge vessel 12. First discharge vessel 12 as a whole thus has three U-shaped bends 12a, 12b, 12c each having two side limbs 35. Of course, there can also be a diffuser 17 in the case of this exemplary embodiment.

Figures 15 and 16 show schematically two exemplary embodiments of a high-pressure discharge lamp 23. The exemplary embodiments of Figures 15 and 16 here differ solely in a

diffuser 17. Each of high-pressure discharge lamps 23 comprises two sublamps 24, 25 differing in color temperature. Sublamps 24, 25 here are fashioned as small, compact discharge vessels or burners. Both sublamps 24, 25 are enclosed by a bulb 26, whose sole function is that of a protective bulb. Analogously to compact fluorescent lamp 10, the two sublamps here are at least switchable. Again the ratio of the powers of the sublamps governs the ratio of luminous fluxes. The range of color temperature that can be achieved is marked at the upper end of the range by additive blending of the two sublamps and at the lower end of the range by the color temperature of the lamp having the lower color temperature. In contrast to compact fluorescent lamp 10, only two conductors are led to each sublamp 24, 25 in high-pressure discharge lamps 23.

One example of a technical solution for economical night/day switching is the combination of an HIT (HIT = high-pressure iodide tubular) 35 W (warm white) with an HIT 150 W (daylight white).

Figure 17 shows a high-pressure discharge lamp 28 having bases at both ends. It substantially corresponds to high-pressure discharge lamp 23 shown in Figure 15 with the exception that high-pressure discharge lamp 28 comprises two bases 11a, 11b in both of its end regions and each sublamp 24, 25 is associated with one base 11a, 11b.

Two exemplary embodiments of a fluorescent lamp 29 are shown in Figures 18 and 19. In addition to the exemplary embodiment of Figure 18, the exemplary embodiment of Figure 19 also has a diffuser 32. Fluorescent lamp 29 is fashioned in tubular shape and has two bases 11a, 11b in its end regions. Two sublamps 30, 31 are arranged in fluorescent lamp 29, these being fashioned as tubular discharge vessels and exhibiting different color temperatures and powers. Here again the sublamp having the higher color temperature and the higher power is dimmable. Because with such fluorescent lamps there is generally an optical element for light deflection, for example a reflector, shading effects are of diminished importance.

It should be pointed out that in principle the sublamps having the lower color temperature or both lamps can be dimmable. Preferably, however, the sublamp having the higher color temperature is dimmable in order that a wider range is available for modifying the color temperature.

Illustrated schematically in Figure 20 is a lamp with a base 11 having contact pins 14, in which lamp both sublamps 12 (e.g., dimmable sublamp having higher color temperature), 13 (e.g., nondimmable sublamp having lower color temperature), each provided with right-angle

bends, extend in the same plane.

Lamp 10 illustrated in Figure 21 is in practice merely a conversion of the embodiment of Figure 19. Again in Figure 21 the two sublamps 12, 13 extend in the same plane, except that each of sublamps 12, 13 has a basic circular shape.

In an exemplary embodiment not shown, one of the two sublamps is a light-emitting diode. Particularly in view of advances in the development of light-emitting diodes it is now becoming possible to fabricate light-emitting diodes with such a high output that they can be utilized for room illumination. A combination of a light-emitting diode with a second sublamp, which can be for example a discharge vessel or a burner, again has within the meaning of the invention a conventional, ordinary design.

Besides the properties described in the foregoing, such a discharge lamp further has the advantage that in combination with the second sublamp an energy-saving standby mode of a lamp according to the invention is especially advantageous. By virtue of its typically long lifetime and its low energy consumption, the light-emitting diode is outstandingly suitable for long-term operation. For example, the light-emitting diode can be operated at night and can enable the orientation of a person in the room. If special illumination is desired, the second sublamp can be switched on in addition to the light-emitting diode or controlled by a dimmer.

In a further exemplary embodiment, not shown, one of the sublamps is a low-pressure discharge lamp, for example a light-emitting diode, and the other sublamp is a high-pressure discharge lamp, in particular a metal-halogen vapor lamp. Metal-halogen vapor lamps require a warmup time after firing, during which warmup time they emit little or no light. By combining a metal-halogen vapor lamp with a low-pressure discharge lamp, light can be emitted by the discharge vessel immediately after the lamp is turned on. The user is thus no longer in the dark during the warmup time of the metal-halogen vapor lamp. With a circuit, the discharge vessel can be turned off once the metal-halogen vapor lamp attains its full light output, or operated together with the metal-halogen vapor lamp.

The embodiments described are distinguished by great simplicity. Essential elements, for example base 11 and bends 12a, 12b, 12c of discharge vessels 12, 13 of the compact fluorescent lamp are known. ~~To this extent, resort can be had to~~ Thus, known elements and proven fabrication methods in design and fabrication can be used. Moreover, conventional ballasts can be employed.

As a rule, a boost in the red spectral component is desirable when the illumination level is reduced. For special applications, however, a contrary dimming pattern can be thought of. The lamp according to the invention can also be designed for this case.

Claims

1. Lamp (10, 23, 28, 29) comprising at least two sublambs (12, 13, 24, 25, 30, 31) differing in color temperature, the net color temperature of the lamp (10, 23, 28, 29) being modifiable, at least one of the sublambs (12, 13, 24, 25, 30, 31) being controllable and the lamp (10, 23, 28, 29) being fashioned as a discharge lamp, characterized in that the sublambs (12, 13, 24, 25, 30, 31) are combined into a lamp (10, 23, 28, 29) that is at least similar to a lamp of conventional design, in particular in the fashion of a compact fluorescent lamp (10, 23) or a fluorescent lamp (28, 29), and in that the sublambs (12, 13, 24, 25, 30, 31) are fixedly arranged on at least one common, ordinary base (11, 11a, 11b).

2. Lamp according to Claim 1, characterized in that the sublambs (12, 13, 24, 25, 30, 31) are at least partly formed from ordinary, in particular commercially available, or standardized components.

3. Lamp according to Claim 1 or 2, characterized in that at least one of the sublambs (12, 13, 24, 25, 30, 31) is dimmable.

4. Lamp according to one of Claims 1 to 3, characterized in that there are two sublambs (12, 13, 24, 25, 30, 31).

5. Lamp according to Claim 4, characterized in that both sublambs are fashioned as low-pressure discharge lamps (12, 13, 30, 31).

6. Lamp according to Claim 4, characterized in that both sublambs are fashioned as high-pressure discharge lamps (24, 25), which are enclosed by a protective bulb (26).

7. Lamp according to Claim 4, characterized in that one sublamp is fashioned as a low-pressure discharge lamp (12, 13, 30, 31) and one sublamp is fashioned as a high-pressure discharge lamp (24, 25).

8. Lamp according to Claim 4, characterized in that one sublamp (12, 13, 24, 25, 30, 31) is a light-emitting diode.

9. Lamp according to Claim 4, characterized in that the two sublamps (12, 13, 24, 25, 30, 31) are fixedly arranged on a common base (11).

10. Lamp according to Claim 9, characterized in that the base (11) is substantially an ordinary base of a compact fluorescent lamp (10, 23).

11. Lamp according to Claim 9 or 10, characterized in that the sublamps (12, 13) are fashioned as substantially U-shaped tubular bends (12a, 12b, 12c, 13).

12. Lamp according to Claim 11, characterized in that one sublamp comprises a single U-bend (13) and the other sublamp comprises a plurality of U-bends (12a, 12b, 12c) connected to one another.

13. Lamp according to Claim 11 or 12, characterized in that the bends (12a, 12b, 12c, 13) of the sublamps at least partly overlap.

14. Lamp according to Claim 12 or 13, characterized in that the base limbs (33, 34) of the bends (12a, 12b, 12c, 13) of the sublamps are substantially perpendicular to one another.

15. Lamp according to Claim 9, characterized in that the two sublamps (12, 13) are fashioned substantially as two concentric rings that extend along a common plane.

16. Lamp according to Claim 15, characterized in that the area enclosed by the rings is substantially rectangular.

17. Lamp according to Claim 15, characterized in that the area enclosed by the rings is substantially circular.

18. Lamp according to Claim 4, characterized in that the lamp (28, 29) is fashioned in rod shape and the two sublamps (24, 25, 30, 31) are fixedly arranged on two opposite bases (11a, 11b).

19. Lamp according to one of the foregoing claims, in particular according to Claim 5, characterized in that the sublamp (12) larger in volume exhibits a higher color temperature than the sublamp (13) smaller in volume.

20. Lamp according to one of the foregoing claims, in particular according to Claim 5, characterized in that the sublamp (12) larger in volume exhibits a higher power than the sublamp (13) smaller in volume.

21. Lamp according to one of the foregoing claims, characterized in that the sublamp (12) having the higher color temperature is dimmable.

22. Lamp according to one of the foregoing claims, characterized in that the higher color temperature is greater than approximately 3000 K, in particular approximately 5000 K, and the lower color temperature is less than approximately 3000 K, in particular 2500 K.

23. Lamp according to one of the foregoing claims, characterized in that different phosphors are contained in the two sublamps (12, 13, 24, 25, 30, 31).

24. Lamp according to one of the foregoing claims, characterized in that there is a diffuser (17, 27, 32) overlapping the sublamps (12, 13, 24, 25, 30, 31).

25. Lamp according to Claim 24, characterized in that the diffuser (17, 27, 32) has openings (18, 19) for ventilating the sublamps (12, 13, 24, 25, 30, 31).

Attached: 7 page(s) of Drawings

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[Translator's note: Figures 2-21 – but not Figure 1 – attached]